

WHAT IS CLAIMED IS:

1. A method of screening for test compounds capable of modulating the activity of an anergy marker protein encoded by an anergy marker listed in Group I or Group II or Group III or Group IV, the method comprising:
  - a) contacting the anergy marker protein with a plurality of test compounds;
  - b) detecting binding of one of the test compounds to the anergy marker protein, relative to other test compounds; and
  - c) correlating the amount of binding of the test compound to the anergy marker protein with the ability of the test compound to modulate the activity of the anergy marker protein, wherein binding indicates that the test compound is capable of modulating the activity of the anergy marker protein and wherein the nucleic acid sequence of the anergy marker is 75% homologous to the anergy marker listed in Group I or Group II or Group III or Group IV.
2. The method of claim 1, wherein the method of screening is high-throughput screening.
3. The method of claim 1, wherein the test compound is from a library selected from a group of libraries consisting of spatially addressable parallel solid phase or solution phase libraries or synthetic libraries made from deconvolution, 'one-bead one-compound' methods and by affinity chromatography selection.
4. The method of claim 1, wherein the selected test compound prevents binding of the anergy marker protein with a bioactive agent selected from the group consisting of naturally-occurring compounds, biomolecules, proteins, peptides, oligopeptides, polysaccharides, nucleotides and polynucleotides.
5. The method of claim 1, wherein the test compound is a bioactive agent selected from the group consisting of naturally-occurring compounds, biomolecules, proteins, peptides, oligopeptides, polysaccharides, nucleotides and polynucleotides.

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6. The method of claim 1, wherein the test compound is a small molecule.
7. The method of claim 1, wherein the anergy marker is selected from the group consisting of Msa.21745.0\_s\_at (also Mm. 21985), Hs. 129764, U44731\_s\_at (also Mm. 1909), Hs. 240849, Msa.1669.0\_f\_at (also Mm. 19123), and GenBank PID:g2853176.
8. The method of claim 1, wherein the anergy marker is selected from the group consisting of Mm. 116802, Hs. 248037, Mm. 10085 and Hs. 96149.
9. The method of claim 1, wherein the anergy marker is selected from the group consisting of Z31202\_s\_at, aa144045\_s\_at, aa174748\_at, c81206\_rc\_at, D86609\_s\_at, ET63436\_at, k00083\_s\_at, MIP1-B\_at, Msa.11439.0\_s\_at, Msa.15983.0\_f\_at, Msa.1669.0\_f\_at, Msa.18713.0\_g\_at, U44731\_s\_at, x12531\_s\_at, and x67914\_s\_at.
10. The method of claim 1, wherein the anergy marker is selected from the group consisting of GRG4, jumonji, RPTP $\sigma$ , PTP-1B, RPTP $\kappa$ , GBP-3, Rab10, SOCS-2, Traf5, DAGK $\alpha$ , LDHA $\alpha$ , phosphoglycerate mutase, CD98, 4-IBB-L, and FasL.
11. The method of claim 1, wherein the anergy marker is GBP-3.
12. A method of screening for test compounds capable of modulating the level of expression of an anergy marker, the method comprising the steps of comparing:
  - a) a level of expression of an anergy marker listed in Group I or Group II or Group III or Group IV in a first sample of cells prior to providing a test compound to the first sample of cells; and
  - b) a level of expression of the same anergy marker in a second sample of cells after providing the test compound to the second sample of cells,wherein a substantially modulated level of expression of the anergy marker in the second sample, relative to the first sample, is an indication that the test compound is capable of modulating the level of expression.

13. The method of claim 12, wherein the test compound is from a library selected from a group of libraries consisting of spatially addressable parallel solid phase or solution phase libraries or synthetic libraries made from deconvolution, 'one-bead one-compound' methods and by affinity chromatography selection.

14. The method of claim 12, wherein the cell is an immune cell.

15. The method of claim 12, further comprising the step of stimulating the cells prior to providing the test compound.

16. The method of claim 15, wherein the step of stimulating the cells includes contacting the cells with a stimulant selected from the group consisting of an antigen, an antigen presenting cell, an activator of NFAT-NFAT ligand signaling, a combination of anti-CD3 and anti-CD28 antibodies, and a combination of anti-TCR and anti-CD28 antibodies.

17. The method of claim 16, wherein the activator of NFAT-NFAT ligand signaling is selected from the group consisting of ionomycin and PMA.

18. The method of claim 12, wherein the anergy marker is selected from the group consisting of Msa.21745.0\_s\_at (also Mm. 21985), Hs. 129764, U44731\_s\_at (also Mm. 1909), Hs. 240849, Msa.1669.0\_f\_at (also Mm. 19123), and GenBank PID:g2853176.

19. The method of claim 12, wherein the anergy marker is selected from the group consisting of Mm. 116802, Hs. 248037, Mm. 10085 and Hs. 96149.

20. The method of claim 12, wherein the anergy marker is selected from the group consisting of Z31202\_s\_at, aa144045\_s\_at, aa174748\_at, c81206\_rc\_at, D86609\_s\_at, ET63436\_at, k00083\_s\_at, MIP1-B\_at, Msa.11439.0\_s\_at, Msa.15983.0\_f\_at, Msa.1669.0\_f\_at, Msa.18713.0\_g\_at, U44731\_s\_at, x12531\_s\_at, and x67914\_s\_at.

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21. The method of claim 12, wherein the anergy marker is selected from the group consisting of GRG4, jumonji, RPTP $\sigma$ , PTP-1B, RPTP $\kappa$ , GBP-3, Rab10, caspase-3, SOCS-2, Traf5, DAGK $\alpha$ , LDHA $\alpha$ , phosphoglycerate mutase, CD98, 4-IBB-L, and FasL.

22. The method of claim 12, wherein the anergy marker is GBP-3.

23. A method of screening for test compounds capable of inhibiting an immune disorder, the method comprising:

a) contacting a panel of anergy marker proteins with a plurality of test compounds, wherein the panel of anergy marker proteins comprise at least 2 anergy marker proteins encoded by anergy markers listed in Group I or Group II or Group III or Group IV;

b) detecting binding of one of the test compounds to the panel of anergy marker proteins, relative to other test compounds; and

c) correlating the amount of binding of the test compound to the panel of anergy marker proteins with the ability of the test compound to inhibit an immune disorder, wherein binding indicates that the test compound is capable of inhibiting an immune disorder.

24. The method of claim 23, wherein the method of screening is high-throughput screening.

25. The method of claim 23, wherein the test compound is from a library selected from a group of libraries consisting of spatially addressable parallel solid phase or solution phase libraries or synthetic libraries made from deconvolution, 'one-bead one-compound' methods and by affinity chromatography selection.

26. The method of claim 23, wherein the selected test compound prevents binding of the anergy marker protein with a bioactive agent selected from the group consisting of naturally-occurring compounds, biomolecules, proteins, peptides, oligopeptides, polysaccharides, nucleotides and polynucleotides.

27. The method of claim 23, wherein the test compound is a bioactive agent selected from the group consisting of naturally-occurring compounds, biomolecules, proteins, peptides, oligopeptides, polysaccharides, nucleotides and polynucleotides.

28. The method of claim 23, wherein the test compound is a small molecule.

29. The method of claim 23, wherein the anergy marker is selected from the group consisting of Msa.21745.0\_s\_at (also Mm. 21985), Hs. 129764, U44731\_s\_at (also Mm. 1909), Hs. 240849, Msa.1669.0\_f\_at (also Mm. 19123), and GenBank PID:g2853176.

30. The method of claim 23, wherein the anergy marker is selected from the group consisting of Mm. 116802, Hs. 248037, Mm. 10085 and Hs. 96149.

31. The method of claim 23, wherein the anergy marker is selected from the group consisting of Z31202\_s\_at, aa144045\_s\_at, aa174748\_at, c81206\_rc\_at, D86609\_s\_at, ET63436\_at, k00083\_s\_at, MIP1-B\_at, Msa.11439.0\_s\_at, Msa.15983.0\_f\_at, Msa.1669.0\_f\_at, Msa.18713.0\_g\_at, U44731\_s\_at, x12531\_s\_at, and x67914\_s\_at.

32. The method of claim 23, wherein the anergy marker is selected from the group consisting of GRG4, jumonji, RPTP $\sigma$ , PTP-1B, RPTP $\kappa$ , GBP-3, Rab10, caspase-3, SOCS-2, Traf5, DAGK $\alpha$ , LDHA $\alpha$ , phosphoglycerate mutase, CD98, 4-IBB-L, and FasL.

33. The method of claim 23, wherein the anergy marker is GBP-3.

34. The method of claim 23, wherein the immune disorder is selected from the group consisting of T cell disorders, B cell disorders, autoimmune disorders, infectious disorders, proliferative disorders, transplant rejection and cancer.

35. The method of claim 23, wherein the immune disorder is selected from the group consisting of diabetes mellitus, rheumatoid arthritis, juvenile rheumatoid arthritis, osteoarthritis, psoriatic arthritis, multiple sclerosis, encephalomyelitis, myasthenia gravis,

systemic lupus erythematosus, autoimmune thyroiditis, atopic dermatitis eczematous dermatitis, psoriasis, Sjögren's Syndrome, Crohn's disease, aphthous ulcer, iritis, conjunctivitis, keratoconjunctivitis, ulcerative colitis, asthma, allergic asthma, cutaneous lupus erythematosus, scleroderma, vaginitis, proctitis, drug eruptions, leprosy reversal reactions, erythema nodosum leprosum, autoimmune uveitis, allergic encephalomyelitis, acute necrotizing hemorrhagic encephalopathy, idiopathic bilateral progressive sensorineural hearing loss, aplastic anemia, pure red cell anemia, idiopathic thrombocytopenia, polychondritis, Wegener's granulomatosis, chronic active hepatitis, Stevens-Johnson syndrome, idiopathic sprue, lichen planus, Graves' disease, sarcoidosis, primary biliary cirrhosis, uveitis posterior, interstitial lung fibrosis, graft-versus-host disease, and allergy.

36. The method of claim 23, wherein the immune disorder is selected from the group consisting of diabetes mellitus, rheumatoid arthritis, multiple sclerosis, Crohn's disease, asthma, allergic asthma, graft-versus-host disease, and allergy.

37. The method of claim 23, wherein the cancer is selected from the group consisting of lung cancer, breast cancer, lymphoid cancer, gastrointestinal cancer, genitourinary tract cancer, pharynx cancer, colon cancer, renal-cell carcinoma, prostate cancer, testicular cancer, non-small cell carcinoma of the lung, cancer of the small intestine, cancer of the esophagus, fibrosarcoma, myxosarcoma, liposarcoma, chondrosarcoma, osteogenic sarcoma, chordoma, angiosarcoma, endotheliosarcoma, lymphangiosarcoma, lymphangioendotheliosarcoma, synovioma, mesothelioma, Ewing's tumor, leiomyosarcoma, rhabdomyosarcoma, colon carcinoma, pancreatic cancer, breast cancer, ovarian cancer, prostate cancer, squamous cell carcinoma, basal cell carcinoma, adenocarcinoma, sweat gland carcinoma, sebaceous gland carcinoma, papillary carcinoma, papillary adenocarcinomas, cystadenocarcinoma, medullary carcinoma, bronchogenic carcinoma, renal cell carcinoma, hepatoma, bile duct carcinoma, choriocarcinoma, seminoma, embryonal carcinoma, Wilms' tumor, cervical cancer, testicular tumor, lung carcinoma, small cell lung carcinoma, non-small cell lung carcinoma, bladder carcinoma, epithelial carcinoma, glioma, astrocytoma, medulloblastoma, craniopharyngioma, ependymoma, pinealoma, hemangioblastoma,

acoustic neuroma, oligodendroglioma, meningioma, melanoma, neuroblastoma, and retinoblastoma.

38. The method of claim 23, wherein the cancer is selected from the group consisting of breast cancer, renal cell carcinoma, melanoma, lymphoma, and multiple myeloma.

39. A method of screening test compounds for inhibitors of an immune disorder in a subject, the method comprising the steps of:

- a) obtaining a sample comprising cells;
- b) contacting an aliquot of the sample with one of a plurality of test compounds;
- c) comparing a level of expression of an anergy marker listed in Group I or Group II or Group III or Group IV; and
- d) selecting one of the test compounds which substantially modulates the level of expression of the anergy marker in the aliquot containing that test compound, relative to other test compounds.

40. The method of claim 39, wherein the test compound is from a library selected from a group of libraries consisting of spatially addressable parallel solid phase or solution phase libraries or synthetic libraries made from deconvolution, 'one-bead one-compound' methods and by affinity chromatography selection.

41. The method of claim 39, wherein the anergy marker is selected from the group consisting of Msa.21745.0\_s\_at (also Mm. 21985), Hs. 129764, U44731\_s\_at (also Mm. 1909), Hs. 240849, Msa.1669.0\_f\_at (also Mm. 19123), and GenBank PID:g2853176.

42. The method of claim 39, wherein the anergy marker is selected from the group consisting of Z31202\_s\_at, aa144045\_s\_at, aa174748\_at, c81206\_rc\_at, D86609\_s\_at, ET63436\_at, k00083\_s\_at, MIP1-B\_at, Msa.11439.0\_s\_at, Msa.15983.0\_f\_at, Msa.1669.0\_f\_at, Msa.18713.0\_g\_at, U44731\_s\_at, x12531\_s\_at, and x67914\_s\_at.

43. The method of claim 39, wherein the anergy marker is selected from the group

consisting of Mm. 116802, Hs. 248037, Mm. 10085 and Hs. 96149.

44. The method of claim 39, wherein the anergy marker is selected from the group consisting of GRG4, jumonji, RPTP $\sigma$ , PTP-1B, RPTP $\kappa$ , GBP-3, Rab10, caspase-3, SOCS-2, Traf5, DAGK $\alpha$ , LDHA $\alpha$ , phosphoglycerate mutase, CD98, 4-IBB-L, and FasL.

45. The method of claim 39, wherein the anergy marker is GBP-3.

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